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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,981	10/14/2003	Hiroyasu Inoue	890050.443	4729

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EXAMINER	
ANGEBRANNDT, MARTIN J	

ART UNIT	PAPER NUMBER
1756	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/684,981	INOUE ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/19/06 & 3/30/07*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15,17,21,23,25,27,29 and 31-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,17,21,23,25,27,29 and 31-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/19/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and made of record. Responses to the arguments of the applicant are presented after the first rejection to which they are directed

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 15,16 and 21-~~22~~ are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. '239.

Uno et al. '239 in an example describes a polycarbonate substrate, a silica,-ZnS lower dielectric layer, GeCrON interface layer, a GeTeSb recording layer, a GeCrON interface layer, an AlON layer and a Au reflective layer. The sputtering process is also described. (14/ 62-15/65). The use of multilayered optical recording media is disclosed with respect to figures 7 and 8 and the text in column 17, but use a GeCrN interfacial layers. The use of Ti-O-N, Ta-O-N, Ge-O-N, Cr-O-N, Si-O-N,Al-O-N, Nb-N-O, Mo-O-N, Zr-O-N for interface layers 4 and 6 (8/21-46). The examiner notes that the GeTeSb layer is used with a 405 nm laser.

It would have been obvious to one skilled in the art to modify the first examples by adding another recording layer as shown in figures 7 and 8 to increase the information capacity of the recording medium and/or it would have been obvious to use other oxynitrides disclosed such as Ti-O-N, Ta-O-N, in place of the GeCrN interface layer used in the example with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of equivalence.

The applicant argues that the Uno et al references do not teach oxides with nitrogen added in the layers. This is without merit and the examiner points out that the specific disclosure of Ti-O-N, Ta-O-N, Ge-O-N, Cr-O-N, Si-O-N, Al-O-N, Nb-N-O, Mo-O-N, Zr-O-N for interface layers 4 and 6 which embraced the range of oxygen and nitrogen. Further, the nitride of Titanium is TiN and the oxide is TiO_2, so even if these were formed in equal amounts (TiN content equal to the TiO_2 content), the oxygen would be a larger percentage of the composition. The applicant is invited to show criticality for the full scope of coverage sought, specifically including the case where the recording layers are phase change layers. The rejection stands.

When the light is incident through the substrate as shown in figures 7 and 8 of Uno et al. '239, the use of Ti-O-N, Ta-O-N in the interface layers would have these on both sides of the recording layers and so the argument that they are not on the light incident side is without merit. The examiner recognizes that in terms of atomic %, the oxygen would be present in a higher amount than nitrogen and so even with equal amounts, the Ti/Ta-O-N the TiO_2 or Ta_2O_5 would inherently be primary component. The examiner has not rejected the claims where the nitrogen is in the 1-12% range. **The applicant has a basis for 3-200 nm for the thickness and exemplifies thicknesses of 30, 17 and 23 nm in the examples. The applicant may wish to exclude very thin layers to obviate the rejections where the TiON or TaON layers are interfacial layers**. The rejection stands.

4. Claims 15,16,21 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uno et al. WO 02/2978 and Sakaue et al. '587.

Uno et al. WO 02/29787 teaches the use of Ti-O-N, Ta-O-N, Ge-O-N, Cr-O-N, Si-O-N,Al-O-N, Nb-N-O, Mo-O-N, Zr-O-N for the protective layers 3 and 7 ((14/1-10) and [0047] in

the corresponding Uno et al. '069). The use of Ti-O-N, Ta-O-N, Ge-O-N, Cr-O-N, Si-O-N,Al-O-N, Nb-N-O, Mo-O-N, Zr-O-N for interface layers 4 and 6 ((14/19-15/4) and [0049] in the corresponding Uno et al. '069). Figure 3, shows an optical recording medium with two recording layers (103,203)

Sakaue et al. '587 teach the recording medium of working example 1, where Ta_2O_5 sputtered in a mixture of Ar and N_2 to form the barrier layer [0061] between the recording layer and the reflective layer. [0054-0062]. The use of other materials including GeON, SiON or AlON in place of the TaON is disclosed. [0068]. See also example 3, and the examples described in table 3 [0079-0089]. The use of TaON yields a better signal amplitude, reduced corrosion and improved thermal conductivity (heat dissipation). [0072-0073]. The varying of the composition of the nitrogen in the sputtering atmosphere is disclosed [0080-0085]

It would have been obvious to one skilled in the art to modify the example of Sakaue et al. '587 by adding another recording layer as shown in figures 7 and 8 of Uno et al.WO 02/2978 to increase the information capacity of the recording medium and/or it would have been obvious to use other oxynitrides disclosed such as Ti-O-N, Ta-O-N, in place of the GeCrON interface layer in a medium corresponding to figure 3 of Uno et al. WO 02/2978 based upon the direction within Uno et al. WO 02/2978 and with a reasonable expectation of improving the performance characteristics based upon the disclosure of Sakaue et al. '587. The examiner holds that while the media are not optimized for 380-450 nm, the media are sensitive in that region due to the composition of the recording layers.

In addition to the basis above, the examiner points out that Ta_2O_5 is sputtered in nitrogen so the nitrogen content is that of an additive (reacting only with the surface of the sputtered

Ta_2O_5 particles), not the dominant component in the teachings of Sakaue et al. '587 and that the applicant has not shown criticality for the full scope of coverage sought.

In addition to the response above, the examiner points out that the formation of TaO-N and TiO-N layers where the nitrogen content in the sputtering atmosphere is controlled is taught by Sakaue et al. '587. The rejection stands.

5. Claims 15,17,21,23,25,27,29 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuy et al. '160, in view of Sakaue et al. '587 and Takaoka et al. '321.

Shuy et al. '160 teach in embodiment 4, a medium comprising a polycarbonate substrate, a ZnS-SiO_2 layer, a transparent Si first recording layer, a reflective Si-Au second recording layer and a ZnS-SiO_2 layer. The ZnS-SiO_2 layers are thermal manipulation layers [0030]. The reflective recording layer may be Ag, Al, Au, Pt, Cu, In, Sn, W, Ir, Re, Rh or Ta [0027]. The transparent recording layer may be Si, Ge, GaP, GaAs, InAs, ...[0026].

Takaoka et al. '321 (US equivalent of JP 60-160036 cited by applicant) teaches optical recording media where the recording layer is a bilayer which is alloyed upon irradiation. Useful first layer materials are Ge,Te, Bi, Tl and alloys thereof and useful second layer materials are different from those of the first layer and may be selected from Te, Bi, Sb, Ag, In and alloys thereof. (2/49-63). Figures 9 and 10 show embodiments where there are two recording layers, which doubles the recording capacity of the media. (4/60-5/9).

It would have been obvious to modify the cited examples of Shuy et al. '160 by using Ta-O-N as thermal manipulation layers in place of the ZnS-SiO_2 layers with a reasonable expectation of improving the performance characteristics based upon the disclosure of Sakaue et al. '587 and further, it would have been obvious to modify the resulting optical recording media

by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

Further it would have been obvious to use Si or Ge for the first recording layer and Cu and alloys thereof with Al, Ag, Au or Sn for the second layer based upon the direction within Shuy et al. '160 to these materials and the direction within Takaoka et al. '321 to the use of alloys in each of the layers.

The addition of Takaoka et al. '321 addresses the multiple recording layer limitations set forth in claim 15. The replacement of the ZnS-SiO_2 layers on both sides of the recording composite places the recited layer on the light incident side of the recording composite.

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4,9-20,22-

25,30-44 of copending Application No. 10/406109 (US 2003/0190551) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/406109 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

The addition of Takaoka et al. '321 addresses the multiple recording layer limitations set forth in claim 15.

No terminal disclaimers have been filed and prosecution proceeds. The request to withdraw these rejections until the claims are allowed is improper as these are valid bases for rejection and the policy of the PTO is to present issues as early as possible in prosecution. When the claims are otherwise allowable, the applicant may chose to revisit this issue and provide proper terminal disclaimers.

8. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1,3,5,7,9,13-15,17,,19,21,23,25,27,29,31,33,35,37-40,44-51 and 54-55 of copending Application No. 10/423686 (US 2003/0202452) in view of Sakaue et al. '587 or Uno et al. '239

It would have been obvious to modify the claimed optical recording media of 10/423686 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

9. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of Patent 6996055 (formerly copending Application No. 10/444172 (US 2003/0223351)) in view of Sakaue et al. '587 or Uno et al. '239

It would have been obvious to modify the claimed optical recording media of 10/444172 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

The provisional nature of this rejection is withdrawn as the patent has issued.

10. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of

copending Application No. 10/425571 (US 2003/0231577) in view of Sakaue et al. '587 or Uno et al. '239

It would have been obvious to modify the claimed optical recording media of 10/425571 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

This has a notice of allowance.

11. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-8 and 13-21 of copending Application No. 10/637407 (US 2004/0027973) in view of Sakaue et al. '587 or Uno et al. '239

It would have been obvious to modify the claimed optical recording media of 10/637407 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

12. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-31 of copending Application No. 10/748979 (US 2004/0152016) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/748979 by using Ta-O-N as the intermediate layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

13. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. 10/717831 (US 2004/0110086).

It would have been obvious to use the dielectric layers described in claims 1 and 2 in the claimed optical recording media of 10/717831 including those using the Cu layer (cl 4) and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

14. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/818324 (US 2004/0202097) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/818324 by using Ta-O-N as the intermediate layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

15. Claims 15,17,21,23,25,27,29 and 31-34 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-24 of US patent 7018695 (formerly copending Application No. 10/808628 (US 2004/0191685)) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/808628 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double)

the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This provisional nature of the rejection is withdrawn as the patent has issued.

16. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/764805 (US 2004/0157158) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/764805 by using Ta-O-N as the dielectric layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

17. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of copending Application No. 10/613525 (US 2004/0052194) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/613525 by using Ta-O-N as the light transmission layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al.

'239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

18. Claims 15,17,21,23,25,27,29 and 31-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of copending Application No. 10/612615 (US 2004/0004932) in view of Sakaue et al. '587 or Uno et al. '239.

It would have been obvious to modify the claimed optical recording media of 10/612615 by using Ta-O-N as the light transmission layers with a reasonable expectation of forming a useful optical recording medium based upon the disclosure of Sakaue et al. '587 or Uno et al. '239 and further, it would have been obvious to modify the resulting optical recording media by formina a medium with two recording layers are included in a single medium structure to increase (double) the recording capacity as shown in Takaoka et al. '321 with a reasonable expectation of success based upon figures 9 and 10.

This is a provisional obviousness-type double patenting rejection.

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756